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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,127	12/14/2001	Kevin Lewis Cousineau	2949P021	9062

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EXAMINER

PAK, SUNG H

ART UNIT PAPER NUMBER

2874

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/017,127	<b>Applicant(s)</b> COUSINEAU, KEVIN LEWIS	
	<b>Examiner</b> Sung H. Pak	<b>Art Unit</b> 2874	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 2/5/04.  
2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) 17-20 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-3 and 10-16 is/are rejected.  
7) ☒ Claim(s) 4-9 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Applicant's amendment filed 2/05/2004 has been entered. Claims 1-20 are now pending.

#### ***Election/Restrictions***

Newly submitted claims 17-20 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-16, drawn to a system and method of transmitting optical signals from incremental shaft converter via optical fibers, classified in class 385, subclass 25.
- II. Claims 17-20, drawn to electrical-to-optical converter, classified in class 398, subclass 182.

The inventions are distinct, each from the other because of the following reasons:

Inventions group I and group II are related as combination and subcombination.

Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the invention of group I does not require the particulars of the electrical-to-optical converter of group II as evidenced by claim 1. The subcombination has separate utility such as computer network signal converter, etc.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 17-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 10-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Stridsberg (US 6,191,415 B1) as discussed in the prior office action.

Stridsberg reference discloses an optical device with all the limitations set forth in the claims, including: a rotating shaft having shaft movement parameters (column 1 lines 6-11); an incremental shaft encoder to convert the shaft movement parameters of the rotating shaft into differentially encoded electrical signals suitable for processing (column 1 lines 53-61); a first optical converter to convert the differentially encoded electrical signals into optical signals, and a

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plurality of optical conductors to carry the optical signals (column 19 lines 44-47); a second converter to receive the optical signal and convert it back to electrical signals for processing (column 19 lines 44-47); an optical coupler configured to couple shaft movement parameters to the incremental shaft encoder (column 11 lines 36-44).

### ***Response to Arguments***

Starting on page 9 of the applicant's response, it is argued that first, Stridsberg "fails to disclose that the incremental transducer is able to convert the position data into a differentially encoded electrical signal."

The examiner respectfully disagrees with the applicant and points out that Stridsberg discloses the use of two analog signals from the shaft encoder that have phase difference of 90 degrees and differentially encoding the shaft encoder signal (column 7 lines 46-67, column 8 lines 21-36).

Second, it is argued that Stridsberg fails to disclose an electrical-to-optical converter to convert the differentially encoded signal. Further it is argued that what is disclosed in Stridsberg "would not enable one with ordinary skill in the art to understand how the implementation [would] be carried out."

The examiner respectfully disagrees with the applicant and points out that what is disclosed in Stridsberg is sufficient for one of ordinary skill in the art to implement the transmission of shaft encoder signal over the fiber optic transmission line. Because electrical-to-optical converter and optical-to-electrical converters are well known and widely used, a

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reference which discloses a method of transmitting shaft encoder signal over the fiber optic transmission line would sufficiently teach the use of electro-optic converters.

Third, it is argued that Stridsberg fails to disclose optical-to-electrical converter. The examiner respectfully disagrees with the applicant and points out that Stridsberg implicitly disclose the use of optical-to-electrical converter for the reasons stated above. Further more, optical-to-electrical converter would be inherent for processing optical signals that had been transmitted over via fiber optic transmission line.

***Allowable Subject Matter***

Claims 4-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Incremental shaft encoders are well known in the art (see also Li et al (US 5,594,241) and Zinn, Jr. (US 4,218,615)) Also, it is known in the art to convert shaft movement parameters into differentially encoded signal as discussed in the office action. Allen (US 4,475,086) also discloses the use of incremental shaft encoders and converting shaft movement parameters into differentially encoded signal (column 2 lines 21-32). As discussed in the office action, Stridsberg (US 6,191,415 B1) discloses transmitting shaft encoder signals over the fiber optic transmission line.

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However, none of the prior art fairly teaches or suggests an incremental shaft encoder system with electro-optic converter, which comprises a differential-to-single and single-to-differential converter and a transient over-voltage protection circuit for the differential-to-single converter as claimed in this application.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday - Thursday : 6:30am- 5:00pm.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sung H. Pak  
Examiner  
Art Unit 2874

sp



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